

MATH 2210-005: Calculus III

Spring 2021

Lecture: TR 6:00-7:30pm IVC

Instructor: Peter McDonald

Pronouns: he/him/his

Email: mcdonald@math.utah.edu

Office: JWB 212

Office Hours: MR 5:00-6:00pm IVC

Course Description: Vectors in the plane and in 3-space, differential calculus in several variables, integration and its applications in several variables, vector fields and line, surface, and volume integrals. Green's and Stokes' theorems.

Prerequisite(s): "C" or better in (MATH 1220 OR MATH 1250 OR MATH 1320) OR AP Calculus BC score of at least 4.

Credit Hours: 3

Text: *Calculus, with Differential Equations*, 9th Edition, Varberg, Purcell, and Rigdon; **ISBN-13:** 978-0132306331

COVID-19 Considerations: Students must self-report if they test positive for COVID-19 via coronavirus.utah.edu.

Course Outcomes: Upon successful completion of this course, a student should be able to:

- (1) Perform basic vector computations, as well as dot and cross products of two vectors and projection of one vector onto another vector.
- (2) Convert between cylindrical, rectangular and spherical coordinates. Understand when it's prudent to switch to one coordinate system over another in computing an integral.
- (3) Determine the equation of a plane in 3-d, including a tangent plane to a surface in 3-d.
- (4) Find the parametric equations of a line in 3-d.
- (5) Perform calculus operations on functions of several variables, including limits, partial derivatives, directional derivatives, and gradients; understand what the gradient means geometrically.
- (6) Find maxima and minima of a function of two variables; use Lagrange Multipliers for constrained optimization problems.
- (7) Understand divergence and curl of a vector field.
- (8) Compute double and triple integrals in rectangular, spherical and cylindrical coordinates; proper use of double or triple integrals for finding surface area or volume of a 3-d region.
- (9) Compute line and surface integrals.
- (10) Determine if a vector field is conservative and if so, find the corresponding potential function.

- (11) Use and understand when to apply Green's Theorem, Gauss' Divergence Theorem and Stokes Theorem.

Communication and Technology Expectations:

- It is easiest to reach me via Canvas message or emailing me directly at the email listed above. I check email 2-3 times a day between the hours of 10am-8pm.
- I communicate to the class primarily through Canvas announcements. Please turn your notifications on so that you don't miss any updates about the course.
- The course will be delivered via Zoom as a flipped classroom. Students will be expected to watch an hour and a half of lecture videos a week with class time devoted to working on examples in groups. Lecture videos can be found at <http://www.math.utah.edu/lectures/math2210.php>
- Students should come to class prepared to participate and are encouraged to have their video cameras on if possible.
- Students should be generally familiar with using Canvas. Homework and exams will need to be uploaded to Canvas and students will be expected to participate in weekly Canvas discussion posts for credit.
- Exams will be proctored via Zoom during our regular class time (except for Exam 4 which will take place during the final exam block for this class). Students will need access to a computer with a working webcam for these exams. Additionally, students will need to be able to scan exams using a device separate from the device their webcam is on (usually a phone).
- Office hours will be conducted via Zoom.
- Given that regular computer access will be crucial to success in this course, it is recommended that all students have access to a personal computer. For students who do not have access to a computer, the Marriott library is loaning laptops to students. More information can be found at <https://lib.utah.edu/coronavirus/checkout-equipment.php>.

Grading Policy:

- **Homework (20%)**
 - There will be weekly homework with one problem assigned from each section covered that week. The assignments will be posted on Canvas each Tuesday and must be uploaded to Canvas as a PDF the following Tuesday by the beginning of class.
 - In addition to the homework that will be collected, I will include "warm up" problems from each section that you can use to practice the concepts necessary to answer the for-credit question for each section. These do not need to be turned in.
 - Two late homework assignments will be accepted up to 1 week late and the lowest homework grade will be dropped. Any regrade requests for an assignment must be received within a week of grades being posted.

• **Discussion Posts (10%)**

- There will be weekly discussion questions for the course. Each week, you are required to complete one post in response to the prompt or post your own question. You are also required to respond to at least one other students' post.
- You may ask about the warm-up homework problems but not the graded ones, and in your post, you should indicate what you tried or where you got stuck. For every discussion prompt, you have the option to upload a photo or video with your question and/or answer, if you prefer not to type your response.
- Discussion questions will be posted each week on Tuesdays. Your post and response must be completed by Monday at midnight.
- Each weekly discussion will be worth 3 points: 2 points for your post and 1 point for your response. In order to receive full credit, your posts must be thoughtful and respectful. For example, a response of "yes" will not receive full credit.
- Your lowest two discussion post grades will be dropped.

• **Four In-class Exams (17.5% each, 70% total)**

- There will be four exams, one for each chapter of material covered. The dates for these exams are fixed and are listed below. A practice exam will be posted roughly a week prior to the exam that will cover the same material.
- There will be no retakes of exams and I will not offer the exam at a later date except in extenuating circumstances that are communicated to me as far in advance as possible. Any regrade request must be received within a week of grades being posted.
- Students will have the opportunity to submit exam corrections for up to half credit for one of the first three exams.

Letter Grade Distribution:

Final course letter grades will be determined as follows:

	+		-
A		92-100	90-92
B	88-90	82-88	80-82
C	78-80	72-78	70-72
D	68-70	62-68	58-62
E		0-58	

I retain the right to modify this grading scheme during the course of the semester; students will, of course, be well notified of any adjustments.

Important Dates

- Drop Deadline Friday, January 29
- Exam 1** **Thursday February 11**
- Exam 2** **Thursday March 11**
- Withdraw Deadline Friday, March 12
- Exam 3** **Thursday April 8**
- Exam 4** **Thursday, April 29, 6pm**

Calculator Policy: Calculators may be used on homework assignments and labs, but will not be allowed during quizzes or exams. Quiz and exam problems will be designed so that they do not require calculators.

Academic Code of Conduct: Students are encouraged to review the Student Code for the University of Utah: <https://regulations.utah.edu/academics/6-400.php>. In order to ensure that the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one's work, and/or inappropriately collaborating. A student who engages in academic misconduct as defined in Part I.B. may be subject to academic sanctions including but not limited to a grade reduction, failing grade, probation, suspension or dismissal from the program or the University, or revocation of the student's degree or certificate. Sanctions may also include community service, a written reprimand, and/or a written statement of misconduct that can be put into an appropriate record maintained for purposes of the profession or discipline for which the student is preparing. **Specifically, looking up solutions to an assignment online or using sites such as Chegg is forbidden and will result in a grade of zero for the assignment.**

Additional Policies:

ADA Statement: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

University Safety Statement: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

Inclusivity Statement: It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: age, color, disability, gender, gender identity, gender expression, national origin,

political affiliation, race, religion, sexual orientation, and veteran status, and other unique identities. gender, sexuality, disability, age, socioeconomic status, ethnicity, race, culture, and other unique identities. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

Student Names and Personal Pronouns: Class rosters are provided to the instructor with the student's legal name as well as Preferred first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me of any name or pronoun changes (and update CIS) so I can help create a learning environment in which you, your name, and your pronoun will be respected.

Wellness Statement: Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

Other Resources:

Math Tutoring Center: There is free online tutoring via the T. Benny Rushing Mathematics Student Center. For more information, visit their website at <http://www.math.utah.edu/undergrad/mathcenter.php>

Learning Center: The University of Utah Learning Center is offering free tutoring this semester, including tutoring for MATH 2210. For more information, visit their website at <https://learningcenter.utah.edu/>

Departmental Videos: The math department has a full set of lecture videos which you are welcome to use to supplement our course material. These can be found at <http://www.math.utah.edu/lectures/>

Discrimination and Harassment: If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or Office of the Dean of Students, 270 Union Building, 801-581-7066. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS). Please see Student Bill of Rights, section E <http://regulations.utah.edu/academics/6-400.php>. I will listen and believe you if someone is threatening you.

Undocumented Student Support: Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please

contact the Dream Center at 801.213.3697 or visit dream.utah.edu.

LGBT Resource Center: If you are a member of the LGBTQIA+ community, I want you to know that my classroom is a safe zone. Additionally, the University of Utah has an LGBT Resource Center on campus. They are located in Room 409 in the Olpin Union Building. Hours: M-F 8-5pm. You can visit their website to find more information about the support they can offer, a list of events through the center and links to additional resources: <http://lgbt.utah.edu/>. Please also let me know if there is any additional support you need in this class.

Veteran's Center: If you are a student veteran, the University of Utah has a Veterans Support Center located in Room 161 in the Olpin Union Building. Hours: M-R 8am-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: <http://veteranscenter.utah.edu/>. Please also let me know if you need any additional support in this class.

Disclaimer: I reserve the right to change any information in this syllabus throughout the semester. If I make a change to the course policies, I will inform you in class, and post an updated version of the syllabus to Canvas. I will hold you accountable for information that is stated in class or posted on canvas.